

## ACCIDENT

<b>Aircraft Type and Registration:</b>	Reims Cessna F152, G-BHFI	
<b>No &amp; Type of Engines:</b>	1 Lycoming O-235-L2C piston engine	
<b>Year of Manufacture:</b>	1980 (Serial no: 1685)	
<b>Date &amp; Time (UTC):</b>	8 September 2020 at 1610 hrs	
<b>Location:</b>	Wards Stone, Forest of Bowland, Lancashire	
<b>Type of Flight:</b>	Training	
<b>Persons on Board:</b>	Crew - 1	Passengers - None
<b>Injuries:</b>	Crew - None	Passengers - N/A
<b>Nature of Damage:</b>	Damaged windscreen and right main landing gear	
<b>Commander's Licence:</b>	Pilot under training	
<b>Commander's Age:</b>	42 years	
<b>Commander's Flying Experience:</b>	49 hours (of which 48 were on type) Last 90 days - 13 hours Last 28 days - 12 hours	
<b>Information Source:</b>	Aircraft Accident Report Form submitted by the pilot	

## Synopsis

A student pilot had been briefed to carry out a planned navigation exercise from Blackpool Airport (EGNH) around the local area before returning to Blackpool. About halfway around the route, the pilot attempted to avoid cloud but inadvertently entered IMC and became disorientated. During his attempts to maintain controlled flight, he briefly contacted the ground, but he was able to climb away and, with the assistance of ATC and another aircraft relaying messages, land back at Blackpool.

A report into the event concluded that it was made more likely by: the inexperience of the student pilot; flying below MSA; the pilot not recognising a general deterioration in the weather conditions; and the pilot expecting the weather to improve because it had done so earlier. The training organisation plans to introduce improved training and pre-flight procedures to reduce the risk of this type of accident occurring in the future.

## History of the flight

The student pilot had completed all the technical aspects of his PPL course, including two flights covering the simulated IMC element using 'Foggles'<sup>1</sup>, and was building his solo flying hours in preparation for his skills test. The route for the flight was from Blackpool

---

### Footnote

<sup>1</sup> 'Foggles' are spectacles worn by the pilot under training to simulate IMC. The lenses are opaque around the edges with a clear view in the centre, which allows the pilot to see the flight instruments but not the external visual references.

---

to Barnoldswick, Settle and Lancaster before returning to Blackpool, including a diversion from the planned track and recovery to the next waypoint. It was to be a VFR flight, and the student and instructor had a detailed discussion on the forecast weather and METARs available for the area and made a visual assessment of the local conditions. It was agreed that the conditions were suitable for the flight, but plans were made for diverting using the lower ground and avoiding the higher terrain should the weather prove poor.

In reviewing the pilot's flight log, the instructor noticed that there were errors in the Minimum Safe Altitude (MSA) on three legs. One was corrected but the others were not, and the planned altitude on the accident leg was left as it was, which was below the MSA. The instructor authorised the flight and the student performed the pre-flight inspection before booking out with ATC. On the first leg from Blackpool to Barnoldswick, the pilot flew to the north of his planned track, to avoid poor weather in the area of Longridge, but remained clear of cloud and in sight of the surface and was able to regain a track for his first turning point. The planned route and the track flown are shown in Figure 1 with markers showing time and GPS height and groundspeed. Figure 2 shows an expanded view including the area of inadvertent flight in IMC.

On approaching Clitheroe, the pilot again saw weather that would not permit him to remain VMC and made a turn to the north. He could see Settle but, as he approached it, he was forced to adjust course again to avoid cloud. After completing the turn, he decided to carry out a practice diversion to Higher Bentham as part of the preparation for his upcoming skills test.

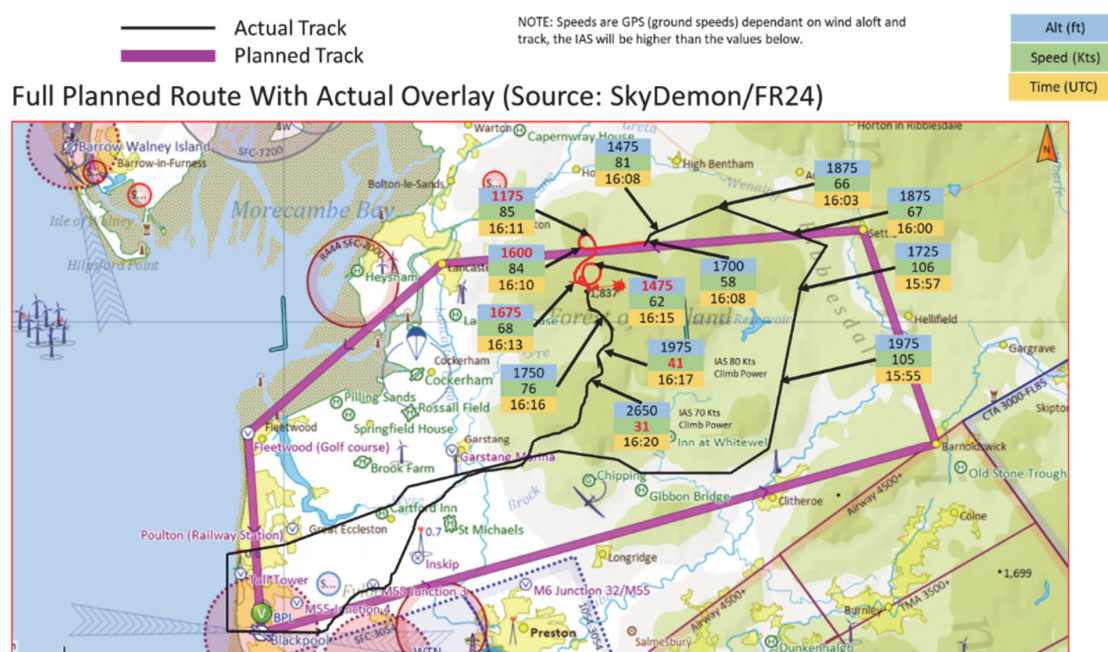
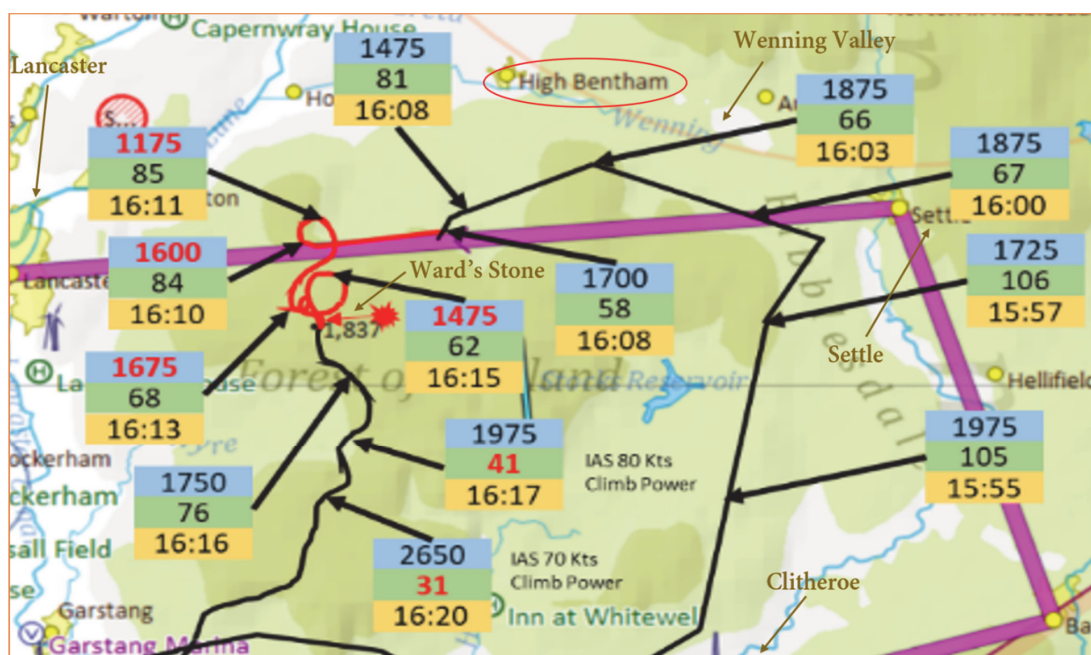


Figure 1

The planned route and actual track (courtesy SkyDemon and Flightradar24)



**Figure 2**

An expanded area of the route with inadvertent flight in IMC indicated in red

Flying north towards the low ground of the Wenning Valley, the pilot saw that the weather was unsuitable but also that there was blue sky and better weather conditions towards Lancaster, and so he decided to continue on a direct heading for there. The GPS track-following recorded GPS-derived height and groundspeed, which showed that the aircraft was at 1,475 ft and 81 kt at 1608 hrs. Shortly after this, the aircraft entered IMC, possibly due to the pilot's attention being focused within the cockpit, and, in accordance with his training, he commenced a 180° turn expecting to regain VMC. However, during the turn, the aircraft descended from 1,600 ft to 1,175 ft in a minute and turned through some 300°, with the pilot experiencing disorientation. Having recognised the loss of altitude, the pilot applied full power and intended to climb above 2,000 ft. He was aware that he was in the vicinity of a ground obstacle shown on the chart as Ward's Stone, which has an elevation of 1,837 ft.

At about this time, the aircraft's track-following showed it to be at 1,675 ft and 68 kt, and the pilot decided to carry out two 360° turns in order to allow him to stabilise his position and "gather his thoughts and intentions". Towards the end of the first turn, at the same altitude and still flying on instruments, the pilot saw the ground in close proximity and pulled up, avoiding it. Halfway around the second turn, at 1615 hrs, the altitude was 1,475 ft and the aircraft groundspeed was 62 kt. Between then and 1616 hrs, the aircraft flew close to Ward's Stone and the pilot again saw the ground. He took "evasive action", but the right main landing gear struck the ground. The impact caused damage to the windscreen and an initial loss of control, which the pilot immediately recovered. A 'MAYDAY' call was transmitted, which was relayed to Warton Radar by another aircraft, and a code of 7700 was set on the transponder.

The pilot was able to climb to 2,650 ft and, despite the loud airflow noise from the broken windscreen and open door, was able to follow the radar vectors provided by Warton Radar until VMC was regained and a landing back at Blackpool Airport was carried out.

### **Meteorology**

Prior to the flight, the pilot and instructor had reviewed the weather using the current Met Office F214 and F215 charts (spot wind and low-level weather forecasts respectively), the latest TAFs and METARs, as well as other weather applications. They had agreed that the weather was suitable for the intended flight and had agreed contingency plans should the pilot encounter any weather-related problems.

The Blackpool Airport TAF and METARs covering the duration of the flight were:

#### **TAF**

TAF EGNH 081405Z 0815/0820 24010KT 9999 SCT015=

#### **METARs**

METAR EGNH 081520Z 23007KT 9999 FEW025 BKN039 20/18 Q1021=

METAR EGNH 081550Z 24008KT 9999 FEW013 BKN031 19/17 Q1021=

METAR EGNH 081620Z 27007KT 9999 FEW013 BKN030 19/17 Q1021=

METAR EGNH 081650Z 26007KT 9999 BKN028 18/17 Q1021=

The information shows that at Blackpool during the time of the flight there were Few or Scattered clouds below the MSA for the route.

### **Aircraft information**

During the impact with the ground, the aircraft was damaged. The right main landing gear was disrupted and the top of the windscreen broke and detached. A significant increase in cabin noise made two-way radio communication almost impossible. The cabin noise was due to the wind caused by the combined effect of the damaged windscreen and the passenger door being blown open. The damage is shown at Figure 3 below.

### **Analysis**

The pilot deviated from his planned route to avoid areas of weather that would have prevented him from maintaining VMC but at the same time stayed as close as possible to the original routing. During the third, west-bound, leg, the pilot inadvertently entered IMC and followed his training to make a 180° turn to regain VMC. His only experience of flying by sole reference to instruments was two flights of dual instruction in VMC using 'Foggles'. During the ensuing flight in IMC he became spatially disorientated and, despite his best efforts, lost height and struck the ground, but he was able to regain control and climb. Having declared an emergency, he was assisted by Warton Radar, relaying initially through another aircraft, to regain VMC. Given his lack of IMC experience, he was fortunate to recover the damaged aircraft back to Blackpool Airport.





**Figure 3**

Aircraft damage caused by the impact with the ground

In its report into the incident, the Declared Training Organisation (DTO) identified four potential causal factors, which were:

- *'Setting of Minimum Safe Altitudes (MSA) – this was marked incorrectly by the student, the instructor corrected the error on the leg that caused the event, but the student did not adjust the planned altitude level – this remained at 2000ft and thus was 500ft below the MSA selected. The student twice recalls an attempt to recover beyond 2000ft, the radar track as previously shown indicates an altitude of between 1475ft and 1750ft, which indicates that the attempt to climb was incomplete at point of incident.'*
- *'Non-diagnosis of the serious nature of the cloud cover in the run up to the incident phase. After departure, cloud cover to the south of Blackpool, cloud cover over Barnoldswick causing an early turn near Clitheroe, the cloud cover preventing transit of the Wenning Valley, were all indicators and markers to the PIC about the deteriorating condition of the weather in the region and the need to execute an RTB in VMC conditions.'*
- *'Low hours and pilot inexperience of the conditions, likely delayed decision making and led to spatial disorientation, resulting in an un-commanded decent.'*
- *'Unconscious bias. There are 4 types of unconscious bias, in this instance the specific aspect is confirmation bias. Confirmation bias is the human trait whereby we seek to identify aspects around us that prove a hypothesis, understanding or perception we have. In this instance it is believed the pilot was seeing several instances of deteriorating bad weather, immediately followed by an opportunity to continue sighting good weather or blue skies, thus confirming the perception that continuing the flight was safe.'*

## Conclusion

The Controlled Flight into Terrain (CFIT) was the result of an inadvertent entry into IMC whilst the pilot was attempting to complete a solo cross-country navigation exercise. The possible causes for the accident were identified by the DTO as being: the inexperience of the student pilot; flying below MSA; the pilot not recognising a general deterioration in the weather conditions; and the pilot expecting the weather to improve because it had done so earlier.

## Safety action

The Declared Training Organisation proposed to introduce the following Safety Actions:

- The club would reinforce / refresh the required approach to reviewing weather data prior to departure to ensure consistency across the PPL, Instructor and Student populations.
- An MSA and Maximum Elevation Figure (MEF) refresher training pack would be developed and issued to all club members. Training would be given to all students in a ground-based environment prior to the navigation phase of the PPL course. This would supplement the normal PPL training and navigation exam.
- Selection of MSA and MEF would be more diligently reviewed by instructors, any errors would be discussed in detail between the pilot and instructor, corrections would be clear and re-enforced, and the planned altitudes would be adjusted accordingly.
- The Club would consider the construction of a standard example map for use as a training aid.
- Unconscious bias (confirmation bias). Human Performance and Limitations (HPL) and Human Factors (HF) refresher pack would be updated to include a section on the effect of unconscious bias and how to mitigate against it. A case study of this event would be included in the club HPL and HF refresher pack.
- Feedback would be given to Blackpool ATC on the visibility of the green 'cleared to land' light. A note would be issued to all members on the meaning of the lights and where to look in the event of radio failures or difficulties.
- The Club would undertake a ground based one-hour review for each student, led by the safety manager, briefing the content of this event as part of a groundschool activity.